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MAIL STOP: APPEAL BRIEF-PATENTS

By: Yung Hong Chen

Date: October 31, 2005

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
Before the Board of Patent Appeals and Interferences

Applic. No. : 10/035,867 Confirmation No.: 4654  
Inventor : Ralf Sigling  
Filed : December 31, 2001  
Title : Device for Cleaning Flue Gas  
TC/A.U. : 1764  
Examiner : Thanh P. Duong  
Customer No. : 24131

Hon. Commissioner for Patents  
Alexandria, VA 22313-1450

BRIEF ON APPEAL

S i r :

This is an appeal from the final rejection in the Office action dated May 23, 2005, finally rejecting claims 1-13.

Appellants submit this *Brief on Appeal*, including payment in the amount of \$500.00 to cover the fee for filing the *Brief on Appeal*.

Petition for extension is herewith made. The extension fee for response within a period of one month pursuant to Section 1.136(a) in the amount of \$120.00 in accordance with Section 1.17 is enclosed herewith.

11/03/2005 DTESSEM1 00000015 10035867

01 FC:1402  
02 FC:1251

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120.00 OP

Real Party in Interest:

This application is assigned to Siemens Aktiengesellschaft of München, Germany. The assignment will be submitted for recordation upon the termination of this appeal.

Related Appeals and Interferences:

No related appeals or interference proceedings are currently pending which would directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

Status of Claims:

Claims 1-13 are rejected and are under appeal. No claims were cancelled.

Status of Amendments:

No claims were amended after the final Office action. A *Response under 37 CFR § 1.116* was filed on June 30, 2005. The Primary Examiner stated in an *Advisory Action* dated July 27, 2005, that the request for reconsideration had been considered but did not place the application in condition for allowance.

Summary of the Claimed Subject Matter:

The invention of the instant application relates to a device for cleaning flue gas (1). The device includes a flue gas

passage (2, 5, 11) for conducting flue gas (1) in a given flow direction, an apparatus (3) for injecting an additive adapted to release a reducing agent in the flue gas passage (2), at least one catalytic converter (8) including a last catalytic converter for reducing nitrogen oxides disposed in the flue gas passage, and a mixer (12) for rendering a mixing of the flue gas with the reducing agent more uniform disposed downstream of the last catalytic converter in the given flow direction. See Figs. 1 and 2 and page 9, lines 21-22, page 10, lines 23-26, and page 11, lines 24-26 of the specification.

References Cited:

3,785,620	Huber	January 15, 1974
4,919,170	Kallinich et al.	April 24, 1990
5,078,973	Kuroda	January 7, 1992
5,423,272	Dunn, Jr. et al.	June 13, 1995
5,437,851	MacInnis	August 1, 1995
6,086,241	Herr et al.	July 11, 2000
JP 10 151324	JP '324	June 9, 1998

Grounds of Rejection to be Reviewed on Appeal

1. Whether or not claims 1-2 and 4-8 are obvious over JP '324 under 35 U.S.C. §103(a).

2. Whether or not claim 3 is obvious over JP '324 in view of Herr et al. and Kallinich et al. under 35 U.S.C. §103(a).
3. Whether or not claims 9 and 11-12 are obvious over JP '324 in view of Huber under 35 U.S.C. §103(a).
4. Whether or not claim 10 is obvious over JP '324 in view of MacInnis and Kuroda et al. under 35 U.S.C. §103(a).
5. Whether or not claim 13 is obvious over JP '324 in view of Dunn, Jr. et al. under 35 U.S.C. §103(a).

Argument:

Whether or not claims 1-2 and 4-8 are obvious over JP '324 under 35 U.S.C. §103(a).

In item 1 on pages 2-4 of the above-mentioned Office action, claims 1-2 and 4-8 have been rejected as being unpatentable over JP '324 under 35 U.S.C. § 103(a).

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, inter alia:

a mixer for rendering a mixing of the flue gas with the reducing agent more uniform disposed downstream of said last catalytic converter in the given flow direction.

Fig. 1 of JP '324 shows several catalyst beds 3 which are spaced apart from one another. A mixer 8 is arranged in the spacing between the two catalyst beds 3. However, in JP '324 there is no mixer arranged downstream of the last catalyst bed.

In contrast, in the invention of the instant application, a mixer (12) is disposed downstream of the last catalytic converter (8a, 8b, 8c). The advantage of this feature is explained on page 13, lines 14-20 of the specification.

The Examiner has stated in the section entitled "Response to Arguments" on page 7 of the final Office action that JP '324 does not disclose a mixer downstream of the last catalyst bed. However, the Examiner has further stated that it would be "prima facie" obvious to provide an additional mixer downstream of the last catalyst bed *"since it has been held in the art that mere duplication of parts has no patentable significance unless a new and unexpected result is produced."*

Evidently, the Examiner did not recognize the underlying problem solved by the invention of the instant application because the Examiner has stated: *"in addition, [in light] of specification on page [13], lines 14-20, it is not clear how a mixer downstream of the last catalyst converter contributes to*

*the deNOxing of the flue gas being the fact the 'mixer' is located much further downstream of the last catalyst converter."*

As becomes clear from the description on pages 1-5 of the specification, the object of the invention of the instant application is not to improve the deNOxing of the flue gas, but rather to reduce the influence of the ammonia slippage (downstream of the whole deNOxing process) on an installation part arranged downstream of the catalytic converter, in particular an air-preheater.

The problem is that, due to the ammonia slippage, a reaction takes place in such an installation and ammoniumhydrogensulfate is formed which is sticky and very corrosive so that it may damage the installation part.

To solve the problem, the mixer is arranged downstream of the last catalyst bed. The mixer leads to uniform mixing of the flue gas with residual ammonia (ammonia slippage) in such a manner that there are no longer any parts of the flue gas with an critical ammonia content of more than 2ppm (see page 6, lines 7-13 of the specification).

Therefore, there is a new and unexpected result provided with the arrangement of the mixer downstream of the last catalyst bed.

There is no indication in any of the cited references that it might be useful to make the flue gas with the residual ammonia uniform. Therefore, there is no hint of adding a mixer downstream the last catalyst bed of a deNOxing arrangement.

Claim 1 is, therefore, believed to be patentable over the art and since claims 2 and 4-8 are ultimately dependent on claim 1, they are believed to be patentable as well.

Whether or not claim 3 is obvious over JP'324 in view of Herr et al. and Kallinich et al. under 35 U.S.C. §103(a).

In item 2 on page 4 of the above-mentioned Office action, claim 3 has been rejected as being unpatentable over JP '324 in view of Herr et al. and Kallinich et al. under 35 U.S.C. § 103(a).

Since claim 1 is believed to be patentable as discussed above and claim 3 is ultimately dependent on claim 1, it is believed to be patentable as well.

**Whether or not claims 9 and 11-12 are obvious over JP'324 in view of Huber under 35 U.S.C. §103(a).**

In item 3 on pages 4-5 of the above-mentioned Office action, claims 9 and 11-12 have been rejected as being unpatentable over JP '324 in view of Huber under 35 U.S.C. § 103(a).

Since claim 1 is believed to be patentable as discussed above and claims 9 and 11-12 are ultimately dependent on claim 1, they are believed to be patentable as well.

**Whether or not claim 10 is obvious over JP'324 in view of MacInnis and Kuroda et al. under 35 U.S.C. §103(a).**

In item 4 on pages 5-6 of the above-mentioned Office action, claim 10 has been rejected as being unpatentable over JP '324 in view of MacInnis and Kuroda et al. under 35 U.S.C. § 103(a).

Since claim 1 is believed to be patentable as discussed above and claim 10 is dependent on claim 1, it is believed to be patentable as well.

**Whether or not claim 13 is obvious over JP'324 in view of Dunn, Jr. et al. under 35 U.S.C. §103(a).**

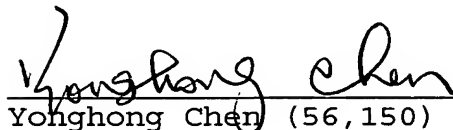


In item 5 on page 6 of the above-mentioned Office action, claim 13 has been rejected as being unpatentable over JP '324 in view of Dunn, Jr. et al. under 35 U.S.C. § 103(a).

Since claim 1 is believed to be patentable as discussed above and claim 13 is dependent on claim 1, it is believed to be patentable as well.

In view of the foregoing, the honorable Board is therefore respectfully urged to reverse the final rejection of the Primary Examiner.

Respectfully submitted,

  
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Claims Appendix:

1. A device for cleaning flue gas, comprising:

a flue gas passage for conducting flue gas in a given flow direction;

an apparatus for injecting an additive adapted to release a reducing agent in said flue gas passage;

at least one catalytic converter including a last catalytic converter for reducing nitrogen oxides disposed in said flue gas passage; and

a mixer for rendering a mixing of the flue gas with the reducing agent more uniform disposed downstream of said last catalytic converter in the given flow direction.

2. The cleaning device according to claim 1, wherein said mixer is a first mixer, and the cleaning device further has a second mixer and a first flow rectifier disposed in series in said flue gas passage between said injection apparatus and said catalytic converter.

3. The cleaning device according to claim 2, which comprises a diverter apparatus for the flowing flue gas disposed between said second mixer and said first flow rectifier.

4. The cleaning device according to claim 1, wherein said mixer is a first mixer, and wherein a flow guiding device selected from the group consisting of a second mixer and a first flow rectifier is disposed in said flue gas passage between said injection apparatus and said catalytic converter.

5. The cleaning device according to claim 1, wherein said catalytic converter is composed of a plurality of catalytic-converter layers, and said mixer includes a respective mixer disposed downstream of each catalytic-converter layer.

6. The cleaning device according to claim 5, which comprises a rectifier for the flowing flue gas disposed in said catalytic converter upstream of at least one of said catalytic-converter layers.

7. The cleaning device according to claim 6, wherein said flow rectifier is selected from the group consisting of lamella rectifiers and grid rectifiers.

8. The cleaning device according to claim 1, wherein said mixer is a static mixer.

9. The cleaning device according to claim 1, wherein said mixer comprises a plurality of immovable lamellae, disposed obliquely with respect to a flue gas flow.

10. The cleaning device according to claim 1 in combination with an air preheater connected downstream of said catalytic converter and heated by the flue gas, wherein said mixer is arranged upstream of the preheater in the given flow direction.

11. The cleaning device according to claim 1, wherein said catalytic converter is composed of a plurality of catalytic-converter layers, said mixer is a first mixer including respective mixers assigned to said catalytic converter and respectively disposed downstream of each catalytic-converter layer, and a mixer disposed downstream of said catalytic converter having wider lamellae than said mixers assigned to said catalytic converter.

12. The cleaning device according to claim 11, which comprises a second mixer disposed between said injection apparatus and said catalytic converter and having wider lamellae than said mixers assigned to said catalytic converter.

13. The cleaning device according to claim 1 connected to and configured to clean flue gas from a fossil-fuel-fired steam generator in a power plant.

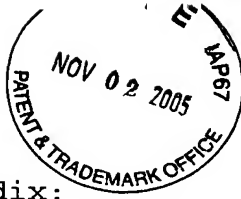
Application No. 10/035,867

Brief on Appeal, dated 10/31/05



Evidence Appendix:

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or any other evidence has been entered by the Examiner and relied upon by appellant in the appeal.



Related Proceedings Appendix:

Since there are no prior or pending appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in this appeal, no copies of decision rendered by a court or the Board are available.